Instruction Manual Lunt 100 Modular Telescope:

Lunt Solar 100mm H-alpha Modular System



Lunt 100MT pictured in H-alpha Mode

Instructions for **H-alpha** use and conversion to:

Double Stack H-alpha

White Light Solar Viewing

Calcium K-Line Solar viewing

Nighttime observing

Terrestrial Observing

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Modular designed multipurpose telescope, both for observing the sun in the H-alpha wavelength, as well as for night sky observations. Easy conversion between the different applications with a few simple steps.

Included Contents:

- LS100MT telescope with FPL53 Triplet lens

- H-alpha unit with Pressure-Tuner

- Blocking-filter B1200 or B1800 or B3400. Please note: the version without blocking-filter is for solar observing an additional available blocking-filter absolutely needed! The version with the B3400 comes with the optics installed in the FeatherTouch focuser.

- Mounting ring and dovetail assembly with Red Dot Sun Finder

- 6 knurled screws for easy conversion of the telescope

- Protection caps for the H-alpha unit

- Transport case

Congratulations and thank you for purchasing the modular LS100MT telescope from Lunt Solar Systems! Enjoy observations in different wavelengths with this small and easy to transport telescope. The Triplet lens optics guarantee an excellent image in all applications.

Safety Information

There are inherent dangers when looking at the Sun through any instrument. Lunt Solar Systems has taken your safety very seriously in the design of our systems. With safety being the highest priority, we ask that you read and understand the operation of your telescope or filter system prior to use. NEVER attempt to disassemble the system. Do NOT use your system if it is in some way compromised due to mishandling or damage. Please contact the factory with ANY questions or concerns regarding the safe use of your instrument

Never look at the Sun with your naked eye or with a telescope that is not specifically designed to do so. Permanent and irreversible eye damage may result!

Never leave the solar telescope unsupervised while pointed at the Sun. People who are not familiar with the correct operating procedures of the system may inadvertently replace the diagonal or remove the filter itself not being aware of the integrated safety features of each.

The Lunt Solar filter/telescopes are NOT interchangeable with products from other manufactures.

Always be aware that you are viewing in direct sunlight. Take necessary precautions to protect yourself from sunburn and heat exposure.

A Lunt Solar Systems solar filter or telescope houses many optical elements that are all pre-aligned and fixed at the factory. There are no user serviceable parts inside the scope. The telescope or filter should NEVER be taken apart. This will not only void your warranty leading to costly repairs, it can only serve to further damage the instrument and compromise its safety.

Most Lunt Solar Systems filters and telescopes house a delicate optical element referred to as an Etalon. These etalons are suspended in the filter housing in an effort to both protect it and isolate it from outside influences, which could de tune the etalon filter. Extensive research has been done to assure the best performance of what is essentially the "heart" of the system while protecting it from the day-to-day bumps, jarring, and vibrations of normal use. However, the instrument should NEVER be subjected to shock due to being dropped. Mishandling of the filters system will cause the etalon to de-contact (not covered under warranty) and will render the instrument nonfunctional until repaired.

The instrument should be stored in its original case. As with any precision optical instrument it should be kept in as low a humidity area as possible. With proper handling and care the filter should last a lifetime.

Okay let's get started...



Note: - During shipping some the set screws at the tube or the focuser may become loose. Simply re-tighten the screws using the included hex-key. We have also included 6 knurled thumb screws. The set screws on the red H-alpha unit can be replaced by these knurled screws to make it easier to convert the telescope later.

Safety First! - Always check any telescope before use for solar observing. Do not use any telescope or filter that appears to be damaged. Verify that all glass and filters are in place. - The Blocking Filter diagonal or extension tube must always be used with the Lunt telescope or filter for solar observing.

For sun observation 100mm of the telescope's aperture is used and the focal length is 714mm. The etalon with the air pressure tuning provides a bandwidth of <0.65 Angstrom.

So you have your **LS100MT** setup on a mount. Let's take a look!

- Place a ~25mm eyepiece in the focus end so you have the largest field of view to look at.
- Pull the diagonal slide tube out about 50mm.
- Put the focus tube at about 75% of travel.
- Align your scope using the Sun Finder Handle



Initial adjustments: Position your mount to where the sun is showing through your Sun Finder handle. Now, look through the eyepiece. You should see a fuzzy red ball. If not, make sure you have removed the dust cap from the front. Additional adjustments may be required to center the sun in your view.

Focus: Coarse focus is achieved by moving the diagonal drawtube in and out. Medium focus is achieved using the larger knobs on either side of the focuser assembly. Fine focus is achieved with the 10:1 reduction (smaller Red knob). The fine focus will be most used when imaging. Focus so that the edge of the Sun is as sharp as possible.

Tuning: On the side of the LS100MT is a large black cylinder. This cylinder is the tuning system for the LS100MT. The black knob of the Pressure Tuned system has a 4 start thread attaching it to the brass cylinder body. Unscrew the black knob completely. The system is now reset for your altitude. Carefully re-thread the PT knob onto the body and engage the threads about one turn. While looking through the eyepiece gently turn the PT knob onto the cylinder body. There will be little resistance at first, but as the pressure in the cylinder builds the resistance will increase slightly. As you turn the cylinder you should see features come into view through the eyepiece. Continued turning will result in the wavelength shifting thru 656.28nm and detail will begin to disappear. Fine-tune the cylinder for the best performance.



Reset the system for your location by unthreading the black PT knob

More about Pressure Tuning: True Doppler Tuning (Pressure Tuning) allows for a shift into and away from the user. Amazingly, this adds a 3D-like component to the viewing experience. The amount of pressure being supplied to the etalon cavity is minimal. It is the equivalent of going from -500ft below sea level to about 10,000ft. When not in use we recommend that you release the pressure by simply backing off the black knob from the cylinder body. If the knob unthreads completely, simply thread it back on 1 turn. It is not necessary to re-set the system every time it is used. Re-setting may only be required if the system has been sitting for a long period of time.

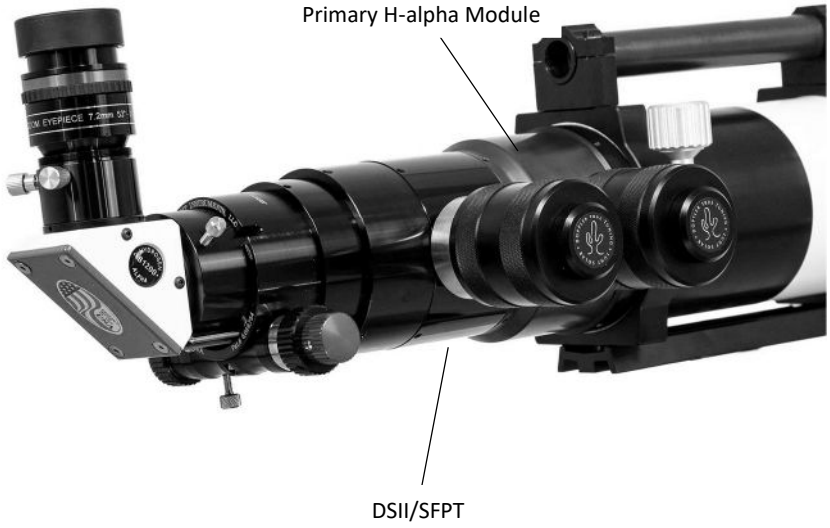
Re-Focus: When you feel you have tuned effectively, re-focus the telescope. The finer details should come into view. Try to relax the eye while observing and let the details come to you.

Change the eyepiece: When you have a good feel for observing at lower magnifications try to increase the magnifications in small steps. Place an interesting artifact in the center of the field. Replace the ~25mm with a ~12mm eyepiece. Look through the eyepiece and re-focus carefully. The image has likely dimmed slightly due to higher magnification, but the details should be easier to see. You can push the magnification as seeing conditions allow. At any point you can return to the 25mm, re-align the system and try again.

Seeing Conditions: Please note that seeing conditions can affect the performance of your telescope in the H-alpha wavelength. Cloud cover, wind, humidity and air turbulence caused by heat play a major role and can complicate the observation of details.

Double stacking In H-alpha:

Double stacking is also possible with the Lunt 100MT telescope. The additionally available internal double stack filter, DSII, can be installed between the focuser and the primary H-alpha module using the set screws or provided thumbscrews depending on your preference. No additional adapters are required. This will narrow the bandwidth to <0.5Angstroms. This significantly increases the contrast on the surface of the sun which makes surface details more visible on the solar surface. *Please see additional instructions included with your DSII for more on double stacking.*



The LS100MT is a complete Solar Telescope. Above described are the basic principles of the scope's use as delivered. This refractor-based system uses a 100mm Fully Multi-Coated FPL53 ED Triplet lens for enhanced resolution. The focal length is 714mm providing a ~7.1 mm image through the 12mm, 18mm or 34mm blocking filter.

IMPORTANT SOLAR VIEWING SAFETY INFORMATION:

Please take extreme caution when using any solar observing instrument making sure all necessary components are securely installed before pointing in the direction of the sun. Use the provided threaded lens cap to cover your front objective lens each time solar viewing components are removed the from this system. Please contact customer service if you have any questions before use.

Removing your H-alpha Module on the Lunt 100MT for modular use:

1) Cover the front objective lens of the Lunt 100MT using the provided threaded lens cap to ensure your safety while swapping components.
2) Prior to removing any parts make sure that the telescope is secure either on your mount or a solid work surface.
3) There are 3 aluminum thumbscrews installed along the opening of the OTA on your Lunt 100mm scope. Loosen the thumbscrews along the diameter of the black collar that secures the H-alpha module. Once loosened, carefully remove your H-alpha module and focuser.





4) Cover the H-alpha module end with the provided dust cap and store safely in your case or on a secure surface.
5) Connect your Backing Plate and Focuser assembly to the opening of the Lunt 100MT OTA. Take care to ensure the Backing Plate and Focuser assembly is fully seated into the OTA. Tighten the 3 thumbscrews around the diameter of the black collar to secure the Backing Plate and Focuser assembly.

6) At this time you can place your desired module (White Light Wedge or CaK) into the focuser for solar use or your desired diagonal for terrestrial or night use.



90-degree prism diagonal for night viewing



45-degree prism diagonal for terrestrial viewing



Lunt 2" White Light Wedge

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- Never look at the Sun with your naked eye or with a telescope that is not specifically designed to do so. Permanent and irreversible eye damage may result.
- Check that all filters are installed correctly and are free of any surface contamination that may compromise performance and/or potentially damage the surface of the optic when exposed to the Sun. i.e.: fingerprints. Perform a routine safety check before each viewing session.
- Never leave the solar telescope unsupervised while pointed at the Sun. People who are not familiar with the correct operating procedures of the system may inadvertently replace the diagonal or remove the filter itself not being aware of the integrated safety features of each.
- The Lunt Solar filter/telescopes are NOT interchangeable with competitor products.
- Always be aware that you are viewing in direct sunlight. Take necessary precautions to protect yourself from sunburn and heat exposure.

Handling and Equipment Care

Handling

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- With proper handling and care the filter should last a lifetime.

Equipment Care

As with most telescopes and optical equipment there can be a buildup of dust and debris on the lens and exterior components after sitting out all day. Here are some guidelines for the care of your new Lunt Solar Systems Telescope:

- Blow off loose dust and dirt using a clean dry air source at low volume. Do NOT use shop compressed air, which contains oil and will further contaminate the instrument.

- Stubborn particulates can be brushed from the surface with a static free lens brush. Use gentle sweeping motions.

- Fingerprints and smudges can be removed using lens tissue or a Kleenex type tissue product. Fold the tissue or cloth to make a "pad", apply a cleaning product to the end of the pad dampening it evenly (do not apply solution to the lens), wipe in circular motion starting at the center and working around the edge and off in one complete motion. Be firm, but do NOT rub. Blow lightly once the lens is clean to help remove residual solution. Residual dust from the cloth can be blown off.

- Do NOT use Acetone or strong degreaser type products, household cleaning agents, paper towels, tissues with added scent or color (plain tissues only), or bleach or acidic products which will damage the anodized surfaces.

If ever in doubt, consult your local dealer or call Lunt Solar Systems at **877-344-7348** with any questions or concerns. We are happy to assist you!